



---

*Environmental Science  
and Engineering*

**Indiana Finance Authority  
Indianapolis, Indiana**

**AVANT GROUP, INC. QUALIFICATIONS**

**FOR**

**ENVIRONMENTAL CONSULTING SERVICES FOR  
REMEDICATION OF PETROLEUM REMEDIATION GRANT  
BROWNFIELD SITES**

**AVANT Group, Inc.**  
**508 Incentive Drive**  
**Fort Wayne, Indiana 46825**  
**(260) 497-9620**

**Project 06-734-10**

**November 2, 2006**

## TABLE OF CONTENTS

	<u>Page</u>
TABLE OF CONTENTS .....	i
INTRODUCTION.....	1
1.0 TECHNICAL PROPOSAL: METHODS.....	2
2.0 COST.....	9
3.0 PREVIOUS EXPERIENCE.....	15
4.0 GEOGRAPHIC COVERAGE AREA .....	31
5.0 CLIENT REFERENCES .....	31
6.0 OTHER.....	32
7.0 CERTIFICATION STATEMENT.....	33

## INTRODUCTION

This Statement of Interest was prepared by AVANT Group, Inc. (AVANT) in response to the Request for Qualifications issued on October 19, 2006, by the Indiana Brownfields Program (IBP) on behalf of the Indiana Finance Authority (IFA). AVANT understands that one consultant will be selected to provide the necessary environmental services, in specific regions of the State, to close Brownfield underground storage tank (UST) sites impacted by petroleum related soil and/or groundwater contamination over an eighteen month period. AVANT understands that one of the leading objectives of IFA is to return project sites, within a municipality, to the public for redevelopment which will increase the quality of life, increase local tax revenue and reinvigorate neighborhood communities.

Possible services include any one or a combination of the following:

- Locate political subdivisions that have that have eligible petroleum contaminated Brownfield sites and identify those sites that can utilize Petroleum Remediation Grant (PRG) funds,
- Perform limited investigations to assess past practices and location, size and contents of tank(s) and to complete the assessment of petroleum impacted soil and/or groundwater,
- Evaluate available technical information to develop and submit scopes of work for IDEM approval following the Risk Integrated System of Closure (RISC) guidelines,
- Coordinate investigative and remedial activities with political subdivisions,
- Conduct all necessary technical activities to complete petroleum remediation in accordance with the approved RISC work plan, including but not limited to:
  - a. Health and safety plan development and implementation
  - b. Storage tank removal
  - c. Soil and/or groundwater sampling
  - d. Remedial system design/implementation/installation/operations
  - e. Project management
  - f. Confirmatory sampling
  - g. Interim project reporting
  - h. Contaminant transport modeling
  - i. Closure sampling
  - j. Remedial system maintenance
  - k. Final project reporting
  - l. Project invoicing
  - m. Drum/container removal
  - n. Such other tasks deemed necessary to achieve remedial goals

The following sections are comprised of AVANT's technical qualifications for performing the above IFA tasks as presented in this Request for Qualifications. The sections describe our ability to complete the work, our staff qualifications and expertise and project familiarity.

## 1.0 GENERAL INFORMATION

- a. **Contact Information.** Three AVANT staff members will be assigned as primary contacts. Project Manager for selected projects under this contract will be Mark K. LeMay (firm President) and will serve as IFA's contact for contractual items and assisting IFA in assessing eligible sites for PRG funding. Neal C. Johnson and Mark R. Anderson will also serve as Project Managers on selected projects and/or selected tasks. The firms contact information is:

AVANT Group, Inc.  
508 Incentive Drive  
Fort Wayne, Indiana 46825  
Phone number: 260/497-9620  
Fax number: 260/497-9670  
E-mail Mark K. LeMay: mlemay@avantgrp.com  
Cell phone number: 260/615-2961  
E-Mail: Neal C. Johnson: njohnson@avantgrp.com  
Cell phone number: 260/615-2801  
E-Mail: Mark R. Anderson: manderson@avantgrp.com  
Cell phone number: 260/450-4030

In addition to the above contact options, IFA staff will also have a single AVANT e-mail address, which when received by AVANT, the e-mail will be distributed from our server to all three IFA Project Managers ensuring a prompt response.

- b. **Firm History.** AVANT Group was founded in 1997 to provide science and engineering services to industry, commercial businesses, and government agencies throughout the Midwest. "AVANT" means "in the forefront". The word embodies our guiding principles of placing service to our clients first and staying at the leading edge of technical and regulatory issues important to them.

AVANT was conceived with the deliberate philosophy of providing personal, hands-on service and having our most senior, experienced staff stay close to our clients. We are dedicated to helping you manage your environmental issues in practical, cost-effective terms using our highly regarded science and engineering expertise and experience. We study your issues, learn your current guidelines/regulations, and work closely with you to find reasonable, common-sense solutions. Our office in Fort Wayne gives us easy access to facilities throughout the Midwestern United States.

When you work with AVANT, you add to your team a staff of reputable, professional environmental engineers, scientists, and technicians who have decades of combined experience performing site assessments, contamination investigations, site closures, and health-based risk assessments, restoring contaminated sites, and assisting with your permitting needs and environmental compliance issues. You also benefit from our strong

professional ethics, honesty and openness and our positive reputation among regulatory agencies.

Our solid reputation for getting results for our clients through service, dependability, professionalism, and cost-effectiveness is our key to success. We place a premium on minimizing your hassles, saving you time and money, and adding value to your prospective Brownfield sites.

AVANT believes its staff's previous working relationship with IFA and IFA's staff in various programs within IDEM has demonstrated AVANT's technical abilities to perform the requested environmental services. The three Project Managers, mentioned above, have combined experience of over 70 years in providing environmental services. This experience includes providing environmental services to the following Indiana political subdivisions:

Allen County	Fort Wayne	Monroeville
Angola	Fulton County	New Haven
Auburn	Goshen	Noble County
Berne	Grabill	Pierceton
Bourbon	Huntington	Roanoke
Bluffton	Leo	Rome City
Butler	Ligonier	South Bend
Columbia City	Marion	Wabash
Elkhart	Mentone	

These relationships, which have been established over the past 17 years, will allow AVANT to efficiently locate political subdivisions having Brownfield sites meeting the PRG eligibility criteria.

- c. **AVANT's Ability.** The ability for AVANT to successfully complete IFA projects can be measured by the qualifications of the firm's staff and our technological resources.

**Staff Capacity.** AVANT's present staffing level gives the firm a capacity exceeding 10,000 chargeable man hours annually. Planned staff additions within the next 12 months will increase this capability. At any given time, approximately 15 to 20% of AVANT's staff capacity is unused and available for other work, which offers significant flexibility in providing staff for IFA projects. A great deal of flexibility is also available within the remaining 80 to 85% of staff capacity through efficient staff and project scheduling. Therefore, from the standpoint of providing sufficient staff, AVANT does not anticipate any problems in completing IFA work in the time required.

**Staff Quality.** Two other measures of AVANT's ability to undertake IFA environmental projects in an efficient, timely, and conscientious manner include (1) the training, experience, professional certifications, and licenses of the firm and its employees and (2)

efficient project management. Inexperience, lack of training, and poor project management can seriously hamper the ability to respond to projects and complete them within the allocated schedules and budgets. AVANT's staff is highly experienced across a wide variety of environmental projects and holds professional endorsements as a result of their experience and specialized training. Staff and company biographical information, certifications/licenses are presented below in Section d.

AVANT's project managers typically have a minimum of 10 years of professional experience (some have more than 20 years of experience) in their respective technical disciplines, proposal preparation, subcontractor coordination, budget management, and client interaction. As a result, our projects are managed efficiently, unexpected project conditions are resolved expeditiously, and our clients interact with a highly experienced professional.

**Equipment and Supplies.** The inability to quickly mobilize the proper field equipment can also jeopardize the successful execution of projects. AVANT owns a full range of vehicles, environmental field equipment, and instrumentation and stocks a wide variety of expendable project supplies, all of which are immediately available and allow us to control project schedules and respond quickly to changed site conditions and environmental concerns as they develop. A list of AVANT's field equipment and instruments is provided below. Other, more specialized equipment and supplies not owned by AVANT can be expeditiously obtained on a project basis from specialty suppliers with whom AVANT maintains excellent credit records.

#### **Partial List of AVANT-Owned Environmental Service Equipment and Instrumentation**

- Direct-push soil and ground-water sampling rig
- Fully equipped remediation-service vehicle
- Multiple field vehicles including sampling van and 4X4
- Photo-ionization detector (PID)
- Flame-ionization detector (FID)
- Oxygen/carbon-dioxide meter
- Hand augers
- Oil/water interface probe
- Water-level indicators
- Water-quality field equipment (filtration equipment; pH; specific-conductance, and redox-potential meters)
- Low-flow groundwater samplers and controllers (peristaltic and bladder)
- YSI 556 Multi (DO, ORP, pH, conductivity) temp-probe meter & flow through cell
- Peristaltic sampling pumps
- Soil-vapor extraction pilot-test blowers (1.5, 3.0, and 10 Hp)
- Pressure washer

**Partial List of AVANT-Owned Environmental  
Service Equipment and Instrumentation**

Generator  
Air compressor  
Surveying equipment  
Ground-water recovery pumps (pneumatic and electric)  
Wide variety of calibration standards and gases to ensure equipment  
Performance and accuracy

**Partial List of AVANT-Stocked Expendable Environmental Field Supplies**

Bailers (pressurized and non-pressurized), disposable polyethylene and  
Teflon™ in various sizes (½", ¾" and 1¾")  
Disposable gloves (latex and nitrile)  
Sample filters  
Sample scoops and sample spatulas  
Tedlar air sampling bags  
Well locks, monofilament sampling line  
Poly, silicone and Teflon lined tubing  
2' and 3' sampling sleeves (for soil-sampling rig)  
Expendable points (for soil sampling rig)  
Bentonite  
¾" Piezometer screens, casings, and plugs

- d. **Biographical Information.** Biographical information of the three Project Managers assign to work under this contract with IFA along with the biographical information for AVANT's licensed Professional Engineer are presented below. These individuals will form the core of AVANT's professional staff for this contract who are assisted by talented, experienced technicians and other support staff. All AVANT field environmental personnel have received environmental health and safety training through programs meeting the requirements of OSHA regulation 1910.120.

**Mark K. LeMay-Senior Project Manager,** Senior Engineer holds a BSCE degree from Lawrence Institute of Technology and has over 25 years of environmental, construction, and geotechnical experience that includes subsurface investigations; site assessments; CERCLA and RCRA investigations, corrective actions, closures, and document preparation; spill response; over 200 contamination investigations, closures, and remediations; and soil and ground-water remedial design and construction. Mr. LeMay is the Project Manager for many sites that are active participants in Indiana's Voluntary Remediation Program (VRP), several of which involve chlorinated compounds and Tier II and III risk assessments. Mr. LeMay is certified in Michigan as a Certified Professional

for assessments, feasibility studies, and remediation of petroleum contaminated soil and ground water.

**Neal C. Johnson, LPG-Project Manager:** Senior Geologist holds Bachelor of Science and Master of Science degrees in geology from Indiana University (Bloomington) and has pursued additional post graduate work in hydrogeology at the University of Houston. Mr. Johnson has 20 years of professional experience. His specialties include subsurface studies, Phase I site assessments, coordination of comprehensive ground-water monitoring projects, environmental data reduction and analysis, asbestos inspections for site assessments and structure demolitions, and preparation of storm-water pollution-prevention plans. Mr. Johnson is a Licensed Professional Geologist, Licensed Water Well Driller, and Certified Asbestos Inspector in Indiana, holds an Indiana Underground Storage Tank certification for UST removals and closures, and is a Licensed Professional Geologist in Illinois.

**Mark R. Anderson, LPG-Project Manager:** Senior Geologist holds Bachelor's degrees in biology and geology from Ball State University and completed graduate courses in geology at the University of Alabama at Tuscaloosa. Mr. Anderson has been active in environmental consulting since 1989. His specialties are Phase I and II site assessments, contamination investigations, UST removals and closures, and Indiana ELTF claim preparation and filing. Mr. Anderson is a Licensed Professional Geologist in Indiana and is certified for UST closures and removals.

**James Konuch, PE, CHMM:** Senior Engineer holds a Bachelor's degree in chemical engineer from Ohio State University. Mr. Konuch has been active in environmental consulting since 1983. His specialties include industrial wastewater and soil and groundwater treatment system design, construction and operations along with industrial compliance audits. Mr. Konuch is a licensed Professional Engineer (P.E.), Certified Hazardous Material Manager (CHMM) and a licensed, Class D, Wastewater Treatment Plant Operator.

As previously discussed, Mr. LeMay will be the primary contact for contractual issues and a single point of contact through the process of qualifying sites for the PRG funding. Following project selection by AVANT and IFA, project specific contacts will be Mr. LeMay, Mr. Johnson or Mr. Anderson. Mr. Konuch's participation in projects will be the design, construction, operation and maintenance of remedial system.

The AVANT project managers assigned to this IFA contract have over 48 years of environmental experience in the State of Indiana. AVANT has been involved in the RISC program since the first draft documents were released in 1997. AVANT's project managers participated in agency outreach seminars throughout the state over the past 9 years and have attended numerous RISC symposiums presented by trade association and attorney groups. AVANT estimates that over 80 projects have incorporated some or all of the RISC elements for investigation, data analysis and/or reporting. Additionally,



AVANT's work on RCRA closures and enforcement actions have required AVANT's extensive knowledge and ability to plan and work within the RISC technical and users guidance documents. AVANT's staff work with RCRA regulations began when EPA began to call interim status permits in the mid 1980. Numerous closure plans were prepared and subsequently implemented. Current RCRA work includes enforcement activities initiated by State inspections and AVANT performed audits of industrial facilities.

AVANT's project managers have been involved in the Voluntary Remediation Program since the programs inception in 1993. AVANT's staff has been involved in over 15 VRP project with 10 of these project having received their covenants Not-to-Sue. AVANT's project managers have also been involved extensively with the LUST and ELTF programs. AVANT's staff has investigated over 300 petroleum release site since 1989. AVANT has experience in the application of ELTF to LUST sites. AVANT routinely works on LUST sites on an ELTF reimbursement basis along with preparing ELTF claim packages for client submission.

A number of AVANT projects begin as a response to an accidental release of petroleum products regulated under the Indiana Spill Rule and these projects are typically completed under the Sate Cleanup Program. AVANT's estimated that 25 projects have been performed under these programs. Work has included coordinating spill response contractors, site soil and/or ground-water sampling and analysis, initial incident reporting, and remediation, if warranted.

Two of AVANT project managers have been involved CERCLA and SARA projects since the 1980. These work activities have included Superfund field team leader, CERCLA liability litigation between a corporation and a municipality and currently performing MNA monitoring and quarterly reporting on a local CERCLA site.

- e. **Firm Financial Stability.** AVANT has been an Indiana corporation since 1991. AVANT current profit and loss statement (as of October 31, 2006) shows revenue of \$2,606,289 and a positive net income. AVANT's only debt is \$10,874 for field equipment. AVANT operates on a "cash in-cash out" basis. AVANT pays its subcontractors upon receipt (same day) of payments being received from clients. AVANT has never had a claim or lawsuit made for non-payment from vendors or subcontractors. Additionally, Dun & Bradstreet has rated AVANT's Financial Stress Class as a 1. 1 is Dun & Bradstreet's lowest rating which means the likelihood that AVANT will experience financial distress within the next 12 months is low. AVANT also has a Class 1 Credit Risk score meaning AVANT is a low credit risk. Referenced documents (financial statements or Dun & Bradstreet reports) are available for IFA review upon request.
- f. **Health & Safety.** AVANT has a general company Health and Safety Plan (HASP) for day-to-day operations. Each project which has a field work component, has a site specific

HASP. These plans are developed using current OSHA, EPA and IOSHA guideline and requirements. AVANT has not had a lost time due to an injury since the firms' inception in 1997. In addition, AVANT has never received a workplace citation. AVANT's Experience Modification Ratings (EMR) for the past four years are 0.89 (2006), 0.86 (2005), 0.84 (2004) and 0.82 (2003). All AVANT's field personnel receive OSHA 40-hour training, receive annual refresher training and first aid and CRP training.

- g. **Subcontractors.** In the course of typical environmental projects, subcontracting opportunities frequently arise for drilling, laboratory testing, and surveying services. For remedial construction, opportunities also exist for electrical, mechanical, and construction subcontractors and equipment vendors. Each project, by its nature, will determine the mix of subcontracted services available.

AVANT is committed to employing certified and qualified Disadvantaged Business Enterprises (DBEs) and Women Business Enterprises (WBEs) as subcontractors and uses the State of Indiana's most current DBE/WBE directory for this purpose. If awarded this contract, AVANT will take positive affirmative actions and make good-faith efforts to solicit statements of interest from qualified DBEs and WBEs and afford them the maximum opportunity to compete for and perform subcontract work.

Three primary subcontractors and one project partner will be used for work performed under this contract with IFA. AVANT has partnered with Engineering & Environmental Solutions, LLC for their expertise in designing and constructing mechanical treatment systems. The firms' senior engineer, Joseph L. Hendrickson, PE is responsible for the design of mechanical systems. AVANT has worked with Mr. Hendrickson since 2003. It should be noted that James Konuch, AVANT's PE had previously worked with Mr. Hendrickson since 1995. Mr. Hendrickson is supported by Mr. Richard Meinholz who has over 15 years experience in the construction and operations of mechanical systems. AVANT established a formal contracture relationship with EES on April 21, 2006 for project involving the two firms.

SCS Environmental Contracting, Inc., located in Fort Wayne and established in 1987, is AVANT's subcontractor for providing the following services under this contract. Note that AVANT has worked with SCS on over 300 projects since 1997.

- UST cleaning, removal and disposal
- Soil excavation, transportation and disposal
- Backfill placement and subsequent grade restoration
- Geoprobe services including soil sampling and direct-push monitoring well installation
- Auger rig drilling, soil sampling and monitoring well installation

ENVision Laboratories, Inc. located in Indianapolis is AVANT's subcontractor for laboratory services for projects under this contract with IFA. ENVision was established

in 2004 by individuals formerly with Pace Analytical Services, Inc. AVANT has had a working relationship with ENVision since their inception in 2004 and with the principals of ENVision at their former place of employment since the mid 1990's.

AVANT will also subcontract with Specialty Earth Sciences, LLC (SESciences) located in Indianapolis and New Albany for remediation support work under this contract with IFA. SESciences is a soil and ground water remediation focused company, providing custom designed environmental treatment equipment and site specific remedial implementation. Specifically, chemical, mechanical and biological technologies. SESciences began in 2003 as a small environmental remediation specialty company in Elizabeth, Indiana. In 2005, the company structure was reorganized and certified as a woman business enterprise (WBE) by the State of Indiana. Currently, SESciences is comprised of the following key staff: Mr. Jason A. Swearingen, Principal Scientist, Dr. Lindsay M. Swearingen, Senior Scientist, Dr. Vernon Kyllingstad, Senior Scientist, and Mr. Joseph Schmitt, Project Scientist. AVANT has worked with SESciences since early 2005 on two projects involving in-situ chemical oxidation followed by biological enhancements.

These three subcontractors and one project partner are not just associated with AVANT for this contract with IFA. These subcontractors/partner provide services on over 90% of AVANT's projects. These relationships include continual communication and collaboration during (1) the proposal phase, (2) project budgeting phase, (3) scheduling and performing field activities, and (4) during reporting and invoicing tasks.

## **2.0 COST**

Presented below are AVANT's Standard Hourly Fee Schedule along with AVANT's Schedule of Equipment-Use Fees and Charges for Stock Supplies for use during the 18-month contract duration. The hourly rates AVANT will be using for the site identification activities will be the Project Manager labor category (\$95/hour), the Senior Engineer/Geologist labor category (\$85/hour) and the Clerical labor category (\$40.00/hour).

### **STANDARD HOURLY FEE SCHEDULE:**

<b><u>Category</u></b>	<b><u>Invoice Rate</u></b>
Project Manager	\$95.00
Senior Engineer/Geologist	\$85.00
Engineer/Geologist	\$75.00
Senior Drafter and Technician	\$65.00
Drafter and Technician	\$55.00
Clerical	\$40.00

**EQUIPMENT RENTAL ITEMS:**

<u>Item</u>	<u>Invoice Rate</u>	<u>Unit</u>
Company vehicle	90.00	day
O <sub>2</sub> /CO <sub>2</sub> meter	125.00	day
Photo ionization detector	95.00	day
Flame ionization detector	125.00	day
Hand auger	25.00	day
Oil/water interface probe	90.00	day
Water-level indicator	30.00	day
Water-quality equipment (pH, SpC, redox, DO meters, etc.)	50.00	day
Water-quality multi-probe	100.00	day
Peristaltic pump	45.00	day
Pressure washer	85.00	day
Air compressor	45.00	day
Direct push sampling rig (<10' capability)	275.00	day
Surveying equipment	75.00	day
Generator	65.00	day
Power auger	60.00	day
Metal detector	25.00	day
Bladder pump & controller	125.00	day

**STOCK SUPPLY ITEMS:**

<u>Item</u>	<u>Invoice Rate</u>	<u>Unit</u>
Bailers, polyethylene	10.00	ea
Bailers, pressurized polyethylene	15.00	ea
Decontamination supplies	30.00	day
Groundwater filters	20.00	ea
Disposable gloves	0.40	pair
Paper towels	2.50	roll
Plastic bags	10.00	box
Sample scoop	2.40	ea
Tedlar air-sampling bag	13.00	ea
Air-sampling tubes	20.00	ea
Well locks (keyed alike)	15.00	ea
Poly tubing	0.20	per ft
Silicone tubing	5.00	per ft
Direct push sampling sleeve	3.00	ea
Bentonite	20.00	per bag

**STOCK SUPPLY ITEMS:**

<u>Item</u>	<u>Invoice Rate</u>	<u>Unit</u>
Expendable points	15.00	ea
Bladder Pump Expendables	26.00	ea

**SCHEDULE OF INTERNAL AND EXTERNAL EXPENSES:**

<u>Category</u>	<u>Invoice Rate</u>	<u>Unit</u>
External Expenses (e.g., travel, lodging, subcontracted services, outside rental equipment, materials purchased for projects, etc.)	cost + 10%	---
Per Diem <sup>1</sup>	\$31.00	day
Mileage (personal vehicle)	0.445	mile
Photocopies	0.15	page
Color Reproductions	0.80	page
Telecopier	1.00	page
Telephone (long distance)	0.20	minute
Postage/Shipping	cost + 10%	---

<sup>1</sup>Includes meals and incidental personal expenses.

Presented below you will find AVANT's schedule of subcontracted cost for the 11 items, a through k, as requested in the Request for Qualifications. Note that all subcontracted costs below include a 10% subcontractor markup.

<b>Task (a)</b>	<b>Region 7</b>	<b>Region 5</b>	<b>Notes</b>
Subcontract removal of tanks, piping, dispensers < 5000 gallons <sup>1</sup>	\$1,650	\$1,650	Does not include backfill material
Subcontractor mobilization	Site specific	Site specific	
Additional soil excavation/ton in excess of amount required to remove UST	\$2.48	\$2.48	

Task (b)	Region 7	Region 5	Notes
Subcontract removal of tanks, piping, dispensers > 5000 gallons <sup>1</sup>	\$1,870	\$1,870	Does not include backfill material
Subcontractor mobilization	Site specific	Site specific	
Additional soil excavation/ton in excess of amount required to remove UST	\$2.48	\$2.48	

Task (c)	Region 7	Region 5	Notes
Subcontract petroleum impacted soil disposal/ton			
Landfill Fees/ton (Allen County)	\$32.73		Cost includes loading
Landfill Fees/ton (Elkhart County)	\$24.75		Cost includes loading
Landfill Fees/ton (Kosciusko County)	\$24.75		Cost includes loading
Landfill Fees/ton (Wabash County)	\$32.73		Cost includes loading
Trucking/ton (Allen, Elkhart, Kociusko Counties)	\$6.60		
Trucking/ton(Whitley County)	\$8.80		
Trucking/ton(Dekalb, Noble Counties)	\$9.90		
Trucking/ton(Lagrange, Steuben Counties)	\$11.00		
Landfill Fees/ton (Jay County)		\$24.75	Cost includes loading
Landfill Fees/ton (Wayne County)		\$14.58	Cost includes loading
Landfill Fees/ton (Carroll County)		\$24.75	Cost includes loading
Landfill Fees/ton (Wabash County)		\$32.73	Cost includes loading
Landfill Fees/ton (Clinton County)		\$24.75	Cost includes loading
Trucking/ton(Jay County)		\$6.05	
Trucking/ton(Wabash County)		\$6.60	
Trucking/ton(Delaware County)		\$7.15	
Trucking/ton(Adams, Blackford, Huntington, Wells Counties)		\$7.70	
Trucking/ton(Howard, Grant Counties)		\$8.25	
Trucking/ton(Henry, Randolph, Wayne Counties)		\$8.80	
Trucking/ton(Hamilton, Madison, Tipton)		\$11.00	

Notes: Landfill fees and trucking cost selection based upon closest landfill to site.

Fuel surcharge will be applied based upon USDOE Weekly Retail On-Highway Midwest Diesel Price using the average price (\$2.501) for the week of 10/30/06 as the benchmark price.

Landfill fees based upon quantities less than 1,000 tons

Task (d)	Region 7	Region 5	Notes
Subcontract labor, trucking and disposal of UST contents per gallon	\$0.33/gallon + 115.50/hour	\$0.33/gallon + 115.50/hour	

Task (e)	Region 7	Region 5	Notes
Subcontract solid waste disposal per ton	\$11.00	\$16.50	

Task (f)	Region 7	Region 5	Notes
Subcontract Geoprobe cost per day with operator	\$1,320	\$1,320	
Subcontractor mobilization	Site specific	Site specific	

Task (g)	Region 7	Region 5	Notes
Subcontract 2" PVC monitoring well installation 20 feet to 30 feet	\$1,320	\$1,320	Auger rig (HSA) well installation
Subcontractor mobilization	Site specific	Site specific	
55-gallon drums for soil cuttings	\$38.50 ea	\$38.50 ea	

Task (h)	Region 7	Region 5	Notes
Subcontract 2" PVC monitoring well installation <20 feet	\$1,265	\$1,265	Geoprobe rig installation with Geoprobe pre-packed screen. Note additional well cost is \$440/well up to 5 wells
Subcontract 2" PVC monitoring well installation <20 feet	\$924	\$924	Auger rig installation
Subcontractor mobilization	Site specific	Site specific	
55-gallon drums for soil cuttings	\$38.50 ea	\$38.50 ea	

Task (i)	Region 7	Region 5	Notes
Subcontract 2" PVC monitoring well installation 31 feet 45 feet	\$1,953	\$1,953	Auger rig installation
Subcontractor mobilization	Site specific	Site specific	
55-gallon drums for soil cuttings	\$38.50 ea	\$38.50 ea	

Task (j)	Region 7	Region 5	Notes
Subcontract 2" PVC monitoring well installation 46 feet 60 feet	\$2,607	\$2,607	Auger rig installation
Subcontractor mobilization	Site	Site	

Task (j)	Region 7	Region 5	Notes
	specific	specific	
55-gallon drums for soil cuttings	\$38.50 ea	\$38.50 ea	

Task (k)	Region 7	Region 5	Notes
Subcontract backfill and trucking/ton	\$11.00	\$13.20	
Subcontractor mobilization	Site specific	Site specific	

Task (l)	Region 7	Region 5	Notes
Subcontract general labor	\$38.50	\$38.50	
Subcontractor mobilization	Site specific	Site specific	
AVANT labor			See AVANT labor rates above

Note: Task "m" equipment rates are listed above.

As previously discussed, laboratory services will be provided by ENVision. Below are ENVision prices for work performed under this IFA contract. Note that the lab cost below includes a 10% subcontractors markup.

<u>Parameter</u>	<u>Method</u>	<u>Price</u>
BTEX+MTBE	8260	\$27.50
TPH-GRO	8015	\$22.00
TPH-DRO	8015	\$33.00
TPH-ERO (C10-C36)	8015	\$38.50
Volatiles (VOCs)	8260	\$66.00
Semi-Volatiles (SVOCs)	8270	\$137.50
PNAs (PAHs)	8270	\$71.50
PNAs (PAHs) low level	8270SIM	\$71.50
PCB	8082	\$77.00
Pesticides	8081	\$110.00
Herbicides	8151	\$220.00
GRO+DRO	8015	\$49.50
BTEX/MTBE+GRO+DRO	8260/8015	\$71.50
BTEX/MTBE+GRO	8260/8015	\$44.00
GRO+DRO+ERO	8015	\$71.50
PNAs+SVOCs	8270+SIM	\$187.00
PNA/VOC Combo		\$126.50
PNA/BTEX/MTBE		\$88.00
BTEX/MTBE+GRO+DRO +TPH-ERO	8260/8015	\$110.00



### 3.0 PREVIOUS EXPERIENCE

- a. **Petroleum Remediation Projects** – AVANT's experience with petroleum remediation projects over the past two years includes the following remedial approaches. This list is not all inclusive. Additional project references are available upon request.

1. **Soil Excavation and Disposal.** AVANT estimates that 75 sites have been remediated by soil remediation since AVANT's inception in 1997. AVANT has successfully remediated gasoline, diesel, oil and petroleum solvents impacted soils using this method. Below are representative projects performed in the last two years.

**Former Independent Service Station.** Following the completion of site investigation activities, AVANT performed soil remediation by soil excavation and off-site disposal. Soils had been impacted by gasoline and diesel fuels. AVANT collected soil samples for disposal characterization using split spoon sampling in areas known to be impacted by petroleum hydrocarbons. The collected soil samples were composited into a single sample for analyses as specified by the landfill. Additionally, AVANT was requested to obtain an INDOT permit for excavation in the highway right-of-way which also required AVANT to post a performance bond. AVANT also worked closely with various utilities as fiber optic, water, sewer, and gas utilities crossed the excavation limits. Upon receiving landfill, INDOT and utility approvals, the soils were excavated and transported to the landfill for disposal. Approximately 1,950 tons of soils were excavated. Confirmation soil sampling and analysis was performed and the excavation was backfilled to grade. Note that free product was observed in site monitoring wells and through the excavation of soils containing residual LNAPLs, free product was no longer observed on-site.

**Former Service Station.** Following the completion of site investigation activities by others, AVANT performed soil remediation by soil excavation and off-site disposal. Soils had been impacted by gasoline and diesel fuels. Initially, AVANT collected soil samples for disposal characterization. Representative soil samples were collected using split spoon sampling in areas known to be impacted by petroleum hydrocarbons. The collected soil samples were composited into a single sample for analyses as specified by the landfill. Upon receiving landfill approval, the soils were excavated and transported to the landfill for disposal. Approximately 1,750 cubic yards of soil were excavated. Confirmation soil sampling and analysis was performed and additional soils were excavated. Following final soil confirmation sampling and analysis, the excavation was backfilled to grade.

**Former Coatings Facility.** AVANT's investigation data (both geophysical and soil analysis) indicated two areas on the site were impacted by petroleum solvents (toluene, ethylbenzene and xylenes). Due to future site development plans, excavation of the impacted soils was required. AVANT collected soil samples for disposal characterization. Representative soil samples were collected using direct-

push soil sampling techniques in areas known to be impacted. The collected soil samples were composited into a single sample for analyses as specified by the landfill. Upon receiving landfill approval, the soils were excavated and transported to the landfill for disposal. Approximately 815 tons of soil was excavated from one site area while 1,204 tons were excavated from the second area. Confirmation soil sampling and analysis was performed and the excavations were backfilled to grade.

**Former Glass Container Manufacturing Facility.** Through several investigative events which included soil sampling and analysis along with test pit excavation, AVANT determined that soil remediation was required. Following landfill disposal approval, AVANT began soil excavation. Approximately 7,860 tons of soil was excavated. Extreme care and numerous precautions were required as a City street was located within seven feet of the north side of the excavation, the excavation extended through the railroad tracks to the south side, a below ground fire protection reservoir was located within 5 feet of the east side of the excavation and the east limit of the excavation was within 10 feet of a creek.

2. **In-situ Soil Vapor Extraction and #4 Air Sparging.** AVANT has used soil vapor extraction on three petroleum hydrocarbon sites and air sparging on two sites. AVANT has used soil vapor extraction at numerous chlorinated solvent contaminated sites. Below you will find more information on the three petroleum hydrocarbon sites. Information on the chlorinated solvents can be provided upon request.

**Former Manufacturing Facility.** AVANT performed several site investigations at this site and assessed the feasibility of soil vapor extraction where various petroleum products were released from two USTs. AVANT installed a pilot test vapor extraction well along with nine vapor probes at three distances outward from the extraction well at three depths with another set of nine vapor probes perpendicular to the initial set. Various vacuums and flow rates were applied to the test pilot well to assess the effective radius of influence at the 18 measurement vapor probes. Following pilot testing, the full scale soil vapor extraction system consisting of three soil vapor extraction wells was designed and constructed. The system consists of a air/water separator vessel, a 7.5 Hp positive displacement blower, activated vapor carbon vessels for air discharge treatment and activated liquid phase carbon vessels for condensate discharge treatment prior to discharge to the local POTW. An air discharge permit was obtained from the State and a condensate discharge permit was obtained from the local municipality. AVANT is currently performing bi-weekly maintenance, monthly air and water discharge sampling and analysis along with quarterly reporting.

**Former Electric Utility Service Center.** AVANT performed a site investigation at this site following removal of a gasoline UST. AVANT performed a feasibility study and determined that air sparging coupled with soil vapor extraction was an economical remedial solution to reduce the concentrations of petroleum contaminants

in soils. AVANT installed a pilot test vapor extraction well along with four vapor probes at two distances outward from the extraction at two depths with another set of four vapor probes perpendicular to the initial set. In addition, an air sparging injection screen was installed adjacent to the soil vapor extraction well. A constant vacuum and flow rate was applied to the test pilot well to assess the effective radius of influence at the eight measurement vapor probes. Following the soil vapor extraction pilot test, air was injected to the air sparging screen at various pressures along with a helium tracer. The existing vapor probes were monitoring for pressure increases and the presence of helium. Following pilot testing, the full scale soil vapor extraction/air sparging system consisting of six soil vapor extraction wells and 12 air sparging screens was designed and constructed. The system consists of a air/water separator vessel, a 5 Hp regenerative blower, activated vapor carbon vessels for air discharge treatment, activated liquid phase carbon vessels for condensate discharge treatment prior to collection and off-site disposal and a 15 Hp air compressor for air sparging.. An air discharge permit was obtained from the State. AVANT was required to obtain a local construction permit and attend and present at a local town meeting the planned remediation. AVANT completed soil remediation within six months and the system was decommissioned during the summer of 2006.

**Existing Truck Plaza.** In-situ soil vapor extraction/air sparging system was recently completed at a large truck travel plaza where gasoline and diesel fuel was released from the petroleum distribution system. Following site investigation activities and regulatory approval of the work plan, the soil vapor extraction/air sparging system was installed at the site during site renovation and therefore, all piping, well vaults, and electrical conduits were incorporated into the site features and were not visible. The soil vapor extraction/air sparging system utilized eight 2-inch diameter wells and three air sparging screens equipped with dual-phase pumps to remove petroleum and to volatilize and enhance degradation of organic compounds from the subsurface soils. An NPDES permit was obtained for the discharge treated waters. Site closure was received in 2006.

3. **Ex-situ Soil Treatment** – Ex-situ soil treatment has been performed at several sites with adequate space to allow for the construction of a land-treatment cell.

**Existing Metals Processing Facility.** AVANT has completed (in August 2006) the soil confirmation sampling of a land-treatment cell that contains approximately 3,300 cubic yards of gasoline and diesel impacted soils from UST closures at a site. Soils were transported to a portion of the site capable of holding the soil in a bermed cell with impacted soils that were approximately 18-inches in thickness. 12-mil visqueen was placed on a graded soil surface with a berm approximately 36-inches high surrounding the treatment cell. Treatment of the soil included the addition of macronutrients (commercial fertilizer) and aerating the soil by tilling and rolling the soil. The soil mixing activities and nutrient additions were initially performed on a monthly basis for the first year of the cell construction and then periodically as

confirmation sampling of the soil cell indicated that portions of the cell had been remediated and other portions required additional mixing and macronutrient additives. Final soil confirmation sampling included dividing the treatment cell by placing an grid on the treatment cell and using statistical selection of sampling locations.

**Existing Truck Travel.** As part of remedial efforts at this site, USTs were closed through removal and the soils impacted with both gasoline and diesel constituents were excavated from beneath the dispenser islands and UST basins. Approximately 3,400 cubic yards of petroleum-impacted soil was removed from the former UST basins and beneath the product piping and dispensers. This soil was transported on-site and placed into two land treatment cells constructed with a 12 mil woven liner inside a bermed area. Two groundwater monitoring wells were installed upgradient and downgradient of the land treatment cells to monitor potential migration of contaminants to the groundwater.

The soils in the land treatment cells were aerated through mechanical mixing techniques while nutrients were added to the soils to facilitate natural attenuation and volatilization of the petroleum constituents adhered to the soil. Samples of the soils were periodically collected and analyzed to assess the progress of the remediation. The cleanup criteria initially used for these soils followed the IDEM LUST 1994 land treatment guidelines. However, the final confirmation sampling included the Risk Integrated System of Closure guidelines for chemical analyses. No detectable constituents were identified above the laboratory detection limits for the specified parameters during the final confirmation sampling event.

The groundwater was sampled and analyzed from the two wells for eight consecutive quarters following the completion of the treatment cell operation. No petroleum constituents were detected during the monitoring events. This site was closed in 2006.

4. **Groundwater Extraction and Treatment.** AVANT has been using groundwater extraction and treatment systems since AVANT's inception and AVANT's staff has many more years of experience using this technology.

**Existing Manufacturing Facility.** Following the removal of two USTs and the performance of a soil and groundwater investigation, AVANT installed a groundwater recovery system to collect groundwater impacted by dissolved phase petroleum constituents. AVANT initially characterized the aquifer by performing hydraulic conductivity testing; both slug testing and the performance of a pumping test. The field test data was analyzed and capture zone modeling was performed to assess the optimal well locations. AVANT installed three pumping wells having Grundfos pumps with the collected waters being processed through two 800-pound carbon vessels prior to discharge to the POTW. AVANT is currently performing operations

and maintenance of this system along with quarterly groundwater monitoring and reporting.

Additional groundwater extraction sites are described under Item 9 and 11.

5. **In-situ Air Sparging** – See Item #2

6. **In-situ Biological Treatment.** AVANT's experience with in-situ biological extends to sites having petroleum hydrocarbon impacts. Biological treatment includes augmentation (the addition of specialized bacteria and nutrients) and enhancement (the addition of oxygen release compounds).

**Existing Manufacturing Facility.** In-situ biological treatment was performed at a site with soils and groundwater impacted with benzene, toluene, ethylbenzene and xylenes. Initially, AVANT performed a bench scale study to assess what available products produced the optimal contaminant degradation at the most economical cost. Following the bench scale study a full scale injection program was designed. AVANT contracted with CL Solutions to design the appropriate bacteria and nutrient mixture to enhance the naturally occurring bacteria present at the site. A pilot test was performed in two areas on the site. These areas included an area where the contaminant concentrations were known to be present but within cleanup goals, and the second in an area where contaminant concentrations exceeded cleanup goals. One injection well was installed with three piezometers installed in three foot radii extending from the injection well in both locations. Baseline groundwater samples were collected and analyzed from the piezometers to establish contaminant concentrations and bacterial populations. A mixture of pseudomonas bacteria and nutrients was injected in the two injection wells at a prescribed rate. Groundwater samples were collected and analyzed from the piezometers at one month intervals for a period of three months to determine the rate of migration of the bacterial populations and the potential decrease in benzene, ethylbenzene, toluene, and xylenes concentrations. Periodic monitoring of the bacteria populations, ammonia-nitrogen, orthophosphate, nitrates, nitrites, dissolved oxygen, carbon dioxide, sulfates, chlorides, methane, ethane, and ethane was performed in the piezometers to determine the effectiveness of the inoculation. The sampling indicated that the total bacteria populations and pseudomonads in the piezometers increased by as much as three orders of magnitude. The pilot test indicated that the site was amenable to full-scale inoculation with the bacteria solution.

The full-scale inoculation of the site occurred over a three-month period with three separate injections of the bacteria solution. The dissolved oxygen in the groundwater was measured in the field and used to determine if an oxygen-enhancing component was required. A calcium peroxide (75%) solution was injected in each of the piezometers used for the bacteria injection. The bacteria solution was then delivered

to the groundwater via the twenty-four, 2-inch piezometers using gravity feed from the vessel used to incubate the bacteria solution.

Results of confirmatory groundwater sampling indicated that the dissolved-phase constituents were reduced by up to 75 percent within six months of the initial treatment. This sampling event, which was performed in August 2006, will be repeated for three additional quarters.

**UST Gasoline Release Site.** Oxygen-releasing compounds were utilized at a LUST site as both source and plume treatment. AVANT assumed operational and investigative activities at the site following the UST removal by another consultant. ORC was injected into a historically persistent portion of the BTEX plume via direct-push holes. Post-injection monitoring indicated that VOC degradation had occurred and that the plume had undergone some constriction in size; however, an areally restricted "hot spot" of the plume still exceeded cleanup goals. A limited excavation was performed to reduce the possible remnant source material in the "hot spot" and PermeOx<sup>®</sup> Plus was mixed into the backfill material to accelerate the degradation of remaining petroleum hydrocarbons in ground water in that area. The site was granted closure following post-remedial performance monitoring.

**Various Petroleum Sites.** Five sites have been subject to the injection of oxygen-releasing compounds by AVANT within the past two years. AVANT has used two separate products to achieve reduction in dissolved-phase BTEX constituents in the groundwater. The compounds utilized included Oxygen Release Compound<sup>®</sup> (ORC<sup>®</sup>) and PermeOx<sup>®</sup> Plus. Typically these products were delivered to the groundwater and capillary-fringe using direct-push technology and grout-type pumps. These materials were delivered to the groundwater in an attempt to chemically oxidize the dissolved-phase petroleum constituents in the groundwater. Added benefit of this procedure is the accelerated bio-remediation that occurs with utilizing the remaining oxygen-releasing compounds in-place once the chemical oxidation has occurred.

AVANT has utilized biological enhancements at several petroleum-related contamination sites within the past two years. AVANT has used two separate products to achieve reduction in dissolved-phase BTEX constituents in ground water. The compounds utilized are Oxygen Release Compound<sup>®</sup> (ORC<sup>®</sup>) and PermeOx<sup>®</sup> Plus. Typically these products were delivered to the ground water and capillary-fringe using direct-push technology. The benefit of this procedure is the accelerated bio-remediation that occurs with utilizing oxygen-releasing compounds. Five sites have been subject to the application of oxygen-releasing compounds by AVANT within the past two years. Two site narratives follow:

**Large Manufacturing Site.** Oxygen-releasing compounds were utilized at a LUST site to accelerate the degradation of petroleum hydrocarbons in ground water and to

reduce the mass of VOCs in ground water. In preparation for the use of oxygen-releasing compounds, groundwater samples were collected and analyzed to assess the viability of the application, provide baseline information, and to assist in monitoring performance. Based upon the baseline analysis it was determined that the extensive area encompassed by the plume, which lies beneath the slab of an industrial building, exists under anaerobic conditions due to the consumption of available DO as degradation occurs. ORC was injected into the plume at 118 direct-push holes. Post-injection monitoring indicated that VOC degradation had occurred and that the plume had undergone some constriction in size; however, persistent reducing conditions existed. After considering several remedial options, the client opted to use PermeOx<sup>®</sup> Plus in a trial application. PermeOx<sup>®</sup> Plus was injected at 76 locations over the portion of the plume containing the source area and more highly contaminated ground water in order that the results could be monitored. Post-application monitoring indicated that the oxygen-releasing compounds were partially successful in remediating the ground water with benzene being the remaining constituent exceeding cleanup goals. The benzene-exceedance area within the plume had contracted approximately 25% and concentrations of other, non-exceeding VOCs declined as well indicating an overall reduction in VOC mass. Following a review of the results along with an assessment of site specific logistical constraints the client decided to pursue closure of the remaining benzene plume via a MNA monitoring program.

**LUST Site.** Oxygen-releasing compounds were utilized at a LUST site where gasoline was released from an UST. AVANT assumed operational and investigative activities at the site following the UST removal by another consultant. ORC was injected into a historically persistent portion of the BTEX plume at via direct-push holes. Post-injection monitoring indicated that VOC degradation had occurred and that the plume had undergone some constriction in size; however, a "hot spot" portion of the plume still exceeded cleanup goals. A limited excavation was performed to reduce the possible remnant source material in the "hot spot" and PermeOx<sup>®</sup> Plus was mixed into the backfill material to accelerate the degradation of remaining petroleum hydrocarbons in ground water in that area. The site was granted closure following post-remedial performance monitoring.

7. **Chemical Oxidation.** AVANT is currently using chemical oxidation to reduce contaminant concentrations to levels acceptable to the VRP program on a large industrial site. Bench scale study activities were performed in order to assess the ability and extent of several chemical compounds to oxidize VOC's (toluene, ethylbenzene, xylenes and benzene) in facility soils and ground water. Bench scale results demonstrated that a combination of catalyzed and uncatalyzed sodium persulfate could effectively and efficiently oxidize VOC impacted soil and ground water at the site. VOC constituents were reduced from a range of 20 to 100% (depending on the specific constituent) utilizing a sodium persulfate solution, both catalyzed and uncatalyzed mixtures. Study results also demonstrated that the persulfate ion and

sulfate anion radical exhibited a lesser affinity for reacting with the natural organic matter (NOM), found in the soil matrix, than other tested oxidants.

Implementation of the in-situ persulfate oxidation treatment is proceeding in two general phases. The first phase of persulfate oxidant injection at the facility provided site specific geophysical performance data (i.e. injection pressures, injection flow rates, and overall inoculate delivery) that are being used to direct a subsequent injections. Results from the Phase I injection were reviewed to evaluate the distribution of the persulfate oxidant throughout the reactive oxidation zone, the horizontal and vertical influence of the injection points, and VOC concentration trends. The collected data was used to guide and adjust the subsequent scheduled persulfate injection.

The initial injection consisted of delivery a sodium persulfate solution and proprietary catalyst mixture into injection points installed at five locations. Ground water within the reactive zone and down gradient areas were monitored prior to, during, and upon the conclusion of injection activities.

Five permanent type II constructed injection wells were installed. Each well consisted of a 2-inch PVC casing and three to five foot sections of continuously wrapped screen (0.010" slot width); and extend to a total depth of five to eight feet below ground surface. Annular space construction material will include hydrated bentonite chips, bentonite powder/Portland cement grout, and silica sands.

Prior to the injection of chemical oxidant, ground water samples were collected from monitoring wells within and adjacent to the interpreted chemical oxidation reactive zone to establish and evaluate pre-injection baseline conditions. Collected ground water samples were analyzed for the following parameters; VOC's, ferrous iron, ferric iron, total sodium, total chloride, and total sulfate. Selected ground water samples were also field titrated for percentage by weight active persulfate and percentage by weight active oxygen, to provide a baseline for later evaluation of linear oxidant dispersion within the formation. In conjunction with the baseline ground water sampling event, the following parameters were field screened and recorded during sample collection; ground water levels, ORP, DO, specific conductance, pH and temperature.

Phase I injection occurred over a two week period at an average injection rate of 0.20 to 0.35 gallons per minute per injection well. Confirmation sampling completed in October 2006 indicates constituent reductions ranging from 34 to 75 percent. AVANT is currently planning a second injection for the week of November 15, 2006.

8. **Phytoremediation.** AVANT has not applied phytoremediation technology to a petroleum release. However, phytoremediation was chosen as the primary method of remediation for groundwater at a site with an abundant supply of fertilizer, fertilizer-related compounds, and space to construct the phytoremediation system.



**Agriculture Facility.** Phytoremediation was chosen as the primary method of remediation for groundwater at this site due to an abundant supply of fertilizer, fertilizer-related compounds, and space to construct the phytoremediation system.

The groundwater at the site was analyzed for nitrate nitrogen, ammonia nitrogen, total phosphorus, and total potassium in order to determine the effectiveness of installing a constructed wetland on the site for remediation purposes. The constructed-wetland design and supporting documents was submitted to the IDEM for permitting purposes prior to the on-site construction. Contaminated groundwater was collected by a trench drain and is directed through a natural phytoremediation treatment system comprised of (1) a recirculating vertical flow constructed wetland, (2) a horizontal-flow constructed wetland, and (3) a specialized soil-absorption/soil-filter system.

The entire wetland/absorption-field system occupies less than one-half acre. The wetland construction required excavation to create a bermed low-lying area. The associated absorption field was located within the capture zone of the trench drain so that any partially treated effluent would be recaptured by the drain and recirculated through the system for additional treatment.

The vertical-flow wetland has dimensions of 34 ft x 34 ft and is dosed for five minutes every 30 minutes. The horizontal-flow wetland has dimensions of 120 ft x 61 ft and has a retention time of five days. The wetland vegetation is a combination of several plant species designed to accommodate the elevated alkalinity and maximum evapotranspiration of the influent ground water. The absorption field has dimensions of 97 ft x 72 ft and consists of 4-inch diameter lateral pipes buried to a depth of 18 inches. The absorption field was planted with deep-rooted native prairie plants that increase the depth of the active soil matrix, increasing attenuation and removal efficiencies.

Removal efficiencies within the wetlands and absorption field are in the 90-percent range during warmer parts of the year and up to 60 percent as a yearly average. No external surface discharge of effluent has occurred. Therefore, active management of the collected and treated groundwater was minimized.

During the remediation, groundwater quality is monitored in February and August of each year as part of the monitoring network. Groundwater levels were measured in all on-site wells during each monitoring event, whether or not such wells are included in the groundwater quality monitoring program. The water levels allowed the development of the drain's capture zone to be monitored. Groundwater collected by the trench drain (the influent to the wetland-treatment system) was monitored at the manhole at the west end of the drain, and effluent from the groundwater treatment was monitored at the outlet structure from the horizontal-flow wetland before the effluent was discharged to the absorption field. This site is currently undergoing

continued groundwater monitoring to document the effectiveness of this remedial technique.

9. **Groundwater Containment/Barrier System.** AVANT utilizes several technologies to create contaminant barrier systems. These systems include pumping wells, physical walls coupled with upgradient pumping and horizontal drains.

**Active Manufacturing Facility.** A groundwater barrier system was installed at a facility in order to prevent the migration of impacted groundwater. The barrier was installed to prevent dissolved-phase petroleum compounds and free product from continuing to impact subsurface soils and groundwater that have been recently remediated to within acceptable VRP guidelines.

The groundwater containment consisted of installing a concrete wall on the downgradient side of the contaminant plume adjacent to a site building. The barrier wall was formed and installed in an open excavation prior to backfilling. An artificial aquifer was installed with pea stone on the upgradient side of the barrier wall. This aquifer was equipped with two, 4-inch sump wells connected with 4-inch well screen. The groundwater collection system was installed approximately 3.0 ft below the water surface at a depth of approximately 6.0 ft below grade. The sump system was constructed of 4-inch PVC with 0.01 slot screen. The PVC was covered with a filter sock and placed in the open excavation while being backfilled with the pea stone. The entire area was finished with a concrete surface suitable for heavy truck traffic. Access to the sump wells is through flush-mounted steel vaults.

The barrier wall and sump wells have allowed for the removal of impacted groundwater and have essentially eliminated the migration of dissolved-phase and free product from impacting recently mitigated soils and groundwater based on recent (2006) groundwater sampling and analysis.

**Active Manufacturing Facility.** AVANT has installed and currently operates a hydraulic dissolved plume containment and free product recovery system at a LUST site impacted by petroleum hydrocarbons. Subsequent to the closure of the USTs and documentation of the presence of free product, personnel currently employed by AVANT performed a feasibility study and developed a work plan for the plume containment and free product recovery at the site. Pilot testing included enhanced free-product recovery tests, biological assays and indicator parameter sampling, a 24-hour pumping test, and capture zone modeling utilizing the EPA's WHPA model. The analysis indicated that three wells were sufficient to depress the local water table to contain the free product plume and accelerate the recovery of the free product which is recovered using down-well belt skimmers. The system is currently operational and AVANT performs system operation and maintenance activities, adjusting the system as needed to obtain peak performance, collects and arranges for

disposal of free product, performs routine performance sampling and prepares quarterly reports.

**Abandon Manufacturing Facility.** AVANT is currently operating a hydraulic containment system to minimize the migration of contaminants from the sites' UST system. The containment system consists of three trench drains designed to create a ground-water capture zone within the plume area that encompasses a residential area. Design activities included aquifer characterization through slug testing, regulatory permitting and the preparation of construction drawings. AVANT is currently collecting and analyzing influent samples from each of the three manholes, obtaining monthly flow measurements and preparing quarterly reports.

**Agriculture Facility.** AVANT designed and installed and is operating a contaminant containment at a fertilizer release site in Wawaka, Indiana. The system utilizes a 630 foot long trench drain that creates a ground-water capture zone. Impacted ground water is drawn into the trench to prevent migration to area water wells. The captured ground water is pumped through a series of wetland treatment cells and after treatment is dispersed by gravity flow through a absorption field/filter bed located within the steady-state capture zone to aid in the natural flushing of contaminants from the soil in the area of release. AVANT performs performance sampling of the system, analyzes analytical data by time-concentration graphs for all sampling events for historical trends, and reports to the IDEM. The data indicates that the system is effective in collecting contaminated ground water for treatment and that eight of the 12 monitored well locations are now below the clean up goal and that seven of those wells are non-detect for nitrate contamination.

**10. Monitored Natural Attenuation/Risk Analysis.** AVANT is currently performing monitored natural attenuation at numerous sites.

AVANT is currently monitoring a ground-water plume impacted by BTEX constituents related to a former gasoline UST to document plume stability. As the plume occurs entirely beneath the floor slab of an active warehouse/distribution center, few practical and economical remedial methods were available that would not interfere with the ongoing operations of the facility. AVANT coordinated with past and current owners of the facility and with tenants within the facility to install 38 monitoring wells for plume assessment purposes. Oxygen-releasing compounds were initially injected to reduce the mass of VOCs in ground water. The oxygen-releasing compounds were partially successful in remediating ground-water with benzene being the remaining constituent exceeding cleanup goals. The benzene-exceedance area within the VOC plume contracted approximately 25% following the injection of oxygen-releasing compounds. However, due to ongoing operations at the facility a cost effective, non-disruptive, and passive remedial approach was desired. Closure is being sought via a program of periodic monitoring followed by the confirmation of plume stability and/or contraction using appropriate graphical and statistical methods

to evaluate trends in the monitoring data. Following IDEM approval, quarterly monitoring began at 15 messenger wells. In accordance with the RISC Technical Guide eight quarters of monitoring will be performed to acquire data for plume stability using (1) common statistical methods (e.g., mean, variance, outlier detection, tests for normal distribution, etc.), (2) graphical (regression) methods to examine concentration trends, and (3) the Mann-Kendall trend test to evaluate the stability of the plume and verify that the plume is stable or contracting. To date, four quarters of monitoring have been performed. If the plume is found to be expanding, a Point of Compliance remedial plan will be provided and alternative remedial methods will be assessed. If warranted, this method may be combined with a health-based risk assessment with the objective of demonstrating an acceptable level of exposure risk.

**Former Recycling Site.** AVANT is currently performing MNA monitoring at an enforcement site in Fort Wayne, Indiana. Quarterly low-flow sampling and gauging activities are performed following the regulatory approved SAP and field protocols. AVANT is responsible for maintenance activities, low-flow sampling of VOCs and biogeochemical indicator parameters, recording of MNA field parameters (DO, ORP, pH, conductivity, and temperature), and gauging and free product measurements of monitoring wells and piezometers in a VOC plume. Periodic sampling for dissolved gases (methane, ethane, and ethene) and microbial DNA assessment sampling is also included. AVANT also performs data reduction and reporting to the EPA and other entities.

**Existing Manufacturing Facility.** AVANT also performs MNA monitoring at a site in Leesburg, Indiana. Quarterly residential well sampling, low-flow sampling, recording of MNA field parameters, and gauging of 31 monitoring wells takes place in an extensive VOC plume that occurs in a largely residential area. AVANT performs this service acting as a subcontractor for non-local consulting firm, which is responsible for reporting activities.

**Various Sites.** In addition to the aforementioned quarterly monitoring sites (petroleum releases), AVANT is performing numerous MNA monitoring activities including low-flow sampling of MNA field parameters, MNA indicator parameter sampling, biological assays, microbial DNA assessment sampling, to provide baseline site information, assess the potential for closure by MNA, and/or assess remedial system performance. These activities are being performed at seven sites in Indiana and Michigan.

11. **Free Product Removal** – Free product removal is currently being undertaken at several LUST facilities and State Cleanup facilities being remediated by AVANT. The free product removal is being accomplished through three different methods.

**Metals Recycling Facility.** A former bulk oil distribution terminal located on site was identified as having free product floating on water in the retention basin for the

former bulk oil ASTs. AVANT performed a subsurface investigation and identified up to 3.0 ft of product floating on the groundwater. The product was analyzed to determine type, viscosity, and specific gravity. The oil was determined to most closely resemble diesel fuel. In order to remove the product from the groundwater, AVANT installed six, 4-inch product recovery wells in the area of the product plume. Product levels in the wells ranged from 0.23 ft to 3.3 ft. The product recovery wells were installed to a depth of 6.5 ft below grade with 0.02 slot screen and a coarse sand pack. The well screen and sand pack allowed for better infiltration of the product into the wells.

Active product removal is being conducted using pneumatic product recovery pumps equipped with product inlets matched to the specific gravity of the product. The recovery pumps are equipped with an air compressor located within a secure building. The pump controllers are located on the top of the containment vessels (i.e., 55-gallon drums) and are solar-powered with a battery back-up. The drums are equipped with high-level sensors that turn off the pumps when the product reaches a specific level in the drum. These pumps can be adjusted for flow rate and on/off cycles. This system requires periodic attention, approximately once per week. Product recovered in this manner is transported off-site for beneficial reuse. This is an on-going product recovery system that has just recently been installed at the site.

**Former Convenience Mart.** AVANT performed UST closures through removal, an ISC, an FSI, and a CAP at this former service station. AVANT also performed the excavation of approximately 700 cubic yards of diesel and gasoline impacted soil and the installation of seven groundwater monitoring wells. Quarterly groundwater monitoring of the groundwater wells indicated the presence of gasoline product in one well and diesel product in another well. Due to the location of the site and no physical amenities, and the rather thin layer of product in the wells (between 0.1 and 0.33 feet), AVANT utilized hydrophobic absorbent socks to remove both the gasoline and the diesel product. The socks are suspended in the wells at the groundwater/product interface and are replaced as needed, depending on the absorption rate of the product. The socks are typically replaced bi-monthly and are contained within a 55-gallon drum on-site until a sufficient volume has accumulated that would require disposal. This is an ongoing process with successful removal of the diesel product to a sheen. The gasoline product is still present, but was last measured at approximately 0.01 feet.

**Existing Manufacturing Facility.** Active product removal is being conducted using pneumatic product recovery pumps equipped with product inlets matched to the specific gravity of the product. The recovery pumps are equipped with an air compressor located within a secure building. The pump controllers are located on the top of the containment vessels (i.e., 55-gallon drums) and are solar-powered with a battery back-up. The drums are equipped with high-level sensors that turn off the pumps when the product reaches a specific level in the drum. These pumps can be

adjusted for flow rate and on/off cycles. This system requires periodic attention, approximately once per week. Product recovered in this manner is transported off-site for beneficial reuse.

**Various sites.** Another method being used at several facilities is the removal of product and impacted groundwater through the use of a vacuum tanker. Product is removed from the ground by the use of a vacuum pump mounted on a 3,000 or 5,500-gallon tank truck. The product/water is transported off-site for treatment and/or disposal. Typically, a marked increase in the attenuation of both free product and dissolved-phase constituents is observed.

Hydrophobic absorbent socks are utilized at several facilities to try and remove both gasoline and diesel product that is not capable of being removed using product recovery pumps. The socks are suspended in the well at the groundwater/product interface and are replaced as needed, depending on the absorption rate of the product.

The socks are typically replaced and contained within a 55-gallon drum on-site until a sufficient volume has accumulated that would require disposal.

12. **Other** - AVANT has completed environmental restrictive covenants (ERCs) for sites impacted with petroleum-related contaminants in the site soils and/or groundwater. These covenants allow for less remedial activities where future site use can be restricted.

b. **Site Closures.** AVANT estimates that over 25 sites have received closure letters from various IDEM programs for petroleum related sites in the past three years. A partial list of closures are presented below:

Former Saint-Gobain Containers Facility, Tank Farm Area, Marion, Grant County, Indiana, VRP No. 6961203

Notice of Technical Adequacy issued on August 8, 2006 provided as technical approval of the remediation completion. AVANT prepared a remedial work plan, prepared a health and safety plan, performed soil and groundwater investigative activities, excavated approximately 7,860 tons of hydrocarbon impacted soils for transportation and disposal, restored the site including the adjacent creek that had been impacted, installed monitoring well network, performed quarterly monitoring and reporting, completed confirmation sampling activities and generated a remediation completion report.

Former Swinger Shell Facility, Wabash, Wabash County, Indiana

LUST Incident No. 199205516 FID No. 701

UST Closures July 2006. AVANT completed the closure through removal of six USTs and the removal of approximately 1,725 cubic yards of soil and 22,000 gallons of water for transportation and disposal. A UST closure and soil remediation report was submitted to the Indiana Finance Authority and the City of Wabash. Approval of the UST closures is still pending.

Former Camshaft Machine Company, Orland, Steuben County, Indiana  
State Cleanup No. 1991-01-040

NFA granted on July 20, 2006. AVANT performed low-flow sampling and demonstrated a stable groundwater plume within a monitoring well network impacted by lead from a former UST release. AVANT reported the findings to the State Cleanup Section and was granted closure based on RISC guidelines.

Daleville Travel Plaza, Daleville, Delaware County, Indiana  
VRP No. 6980604

Covenant Not To Sue issued March 7, 2006. AVANT prepared a remedial work plan, installed remediation equipment for soil and groundwater, performed quarterly groundwater sampling and analysis, maintained the remediation equipment, and completed soil and groundwater confirmation sampling. The Site Remediation Completion Report was approved July 25, 2005.

Former Jack's Service, Freemont, Lagrange County, Indiana  
LUST Incident No. 199902507 FID No. 15887

NFA Pursuant to 1994 UST Guidance granted February 20, 2006. AVANT performed confirmation soil and groundwater sampling and analysis for petroleum-related contaminants. AVANT reported findings to IDEM LUST Section.

SRM Partnership Site, Fort Wayne, Allen County, Indiana  
State Cleanup Site No. 1999-06-201

NFA granted on March 27, 2006. AVANT maintained and performed soil confirmation sampling and analysis for a land-treatment cell consisting of petroleum-impacted soil. Quarterly reports were submitted to the State Cleanup Section along with a final confirmation sampling report.

M&B Dairy Store, Andrews, Huntington County, Indiana  
LUST Incident No. 199911516 FID No. 24238

ERC Approval granted on February 9, 2006. AVANT maintained the on-site monitoring well network and performed quarterly sampling and analysis. ERC was granted due to temporarily closed USTs on the site. Monitoring well network was abandoned on October 31, 2006.

Central Manufacturing, Inc., Parker City, Randolph County, Indiana  
State Cleanup Site No. 2001-08-062

NFA granted on August 3, 2005 and ERC filed on December 10, 2004. AVANT performed a FSI in an area on the site which previously contained USTs. AVANT excavated and transported impacted soil to a landfill for disposal. Confirmation soil samples were collected and analyzed for petroleum-related contaminants and chlorinated contaminants. Closure report and ERC were submitted to the State Cleanup Section.

Former Saint-Gobain Containers Facility, Wastewater Treatment Lagoons, Marion, Grant County, Indiana, VRP No. 6961203

Notice of Technical Adequacy issued on May 4, 2005 provided as technical approval of the remediation completion. AVANT prepared a remedial work plan, prepared a health and safety plan, performed soil and ground-water investigative activities, drained the lagoons under the NPDES discharge, worked soil in lagoon basins to achieve additional drainage and drying, worked soil and established vegetative cover to accelerate the degradation of the petroleum constituents via biological activity and oxidation, graded and restored the site, completed confirmation sampling activities utilizing WDOE TPH fractionation approved by the IDEM, and generated a remediation completion report.

OmniSource Corporation, Fort Wayne, Allen County, Indiana

LUST Incident No. 200005511 FID No. 5531

NFA Pursuant to 1994 UST Guidance granted February 3, 2005. AVANT performed UST closures of diesel and gasoline USTs, ISC, FSI, further FSI, and CAP. Soil excavation/transportation/disposal and groundwater monitoring were initiated at the site. Quarterly reports and a final CAP report were submitted to the IDEM LUST Section.

North Central Juvenile Correctional Facility, Logansport, Cass County, Indiana

FID No. 24781

Closure granted in 2005 for the closure through removal of a diesel fuel UST at this State facility. AVANT coordinated all aspects of the closure with the Indiana DOC.

Former Indiana Construction Facility, Fort Wayne, Allen County, Indiana

Closure occurred in December 2004. Closure through removal of a diesel fuel UST that was determined to be non-regulated based on its last use prior to 1974. AVANT performed a closure assessment according to RISC sampling and analysis guidelines in place at the time of closure.

Former Porter Chevrolet, Ligonier, Noble County, Indiana

LUST Incident No. 200005506 FID No. 8994

NFA Pursuant to 1994 UST Guidance granted June 16, 2004. AVANT performed an FSI and further FSI, prepared a CAP, conducted multiple UST closures, soil excavation/transportation/disposal, and installed multiple groundwater monitoring wells. Soil confirmation sampling was performed along with quarterly groundwater monitoring. Quarterly reports and a final CAP report were submitted to the IDEM LUST Section.

Royal Food Products, Inc., Indianapolis, Marion County, Indiana

VRP No. 6000305

VRP Completion Report Approval granted January 10, 2003. The Certificate of Completion and Covenant Not To Sue were granted later in 2003. AVANT prepared a Remediation Work Plan for dissolved BTEX in the groundwater and soil at the site due to a release from a UST. AVANT installed monitoring wells and collected soil samples for analysis. Quarterly groundwater monitoring was completed along with quarterly progress



reports to the VRP. AVANT completed the remediation at the site and acquired site closure.

AVANT has also been granted closure of petroleum-impacted sites within the last three years in the states of Ohio and Michigan. Three facilities were granted closure in the State of Ohio and two in the State of Michigan. These remedial projects involved soil excavation and disposal, soil vapor extraction, in-situ air sparging and free product removal.

- c. **Fixed Price Remediation Contracts.** Many of AVANT remediation involve fixed fees for the performance of remedial activities. However, AVANT only accepts fixed fee contracts when the investigation data presents a complete 3-dimensional image of the media requiring remediation. AVANT is currently completing a remediation (soil and groundwater) at a large manufacturing facility. The remediation contract was for \$807,517. To date, AVANT has completed 65% of the remedial effort and has expended \$393,109. Due to staff efficiencies, more cost effective remedial technologies, AVANT anticipated completing this project \$100,000 under budget.

AVANT typically performs remedial activities where AVANT fees and expenses are fixed with the only variable being the volume of soil or groundwater being treated. This arrangement caps the client's exposure to unanticipated costs.

#### 4.0 GEOGRAPHIC COVERAGE AREA

AVANT is providing this Statement of Qualifications for Region 7 as our primary selection with Region 5 being AVANT's secondary selection.

#### 5.0 CLIENT REFERENCES

The following is a list client references for petroleum related sites. Any of the following individuals may be contacted regarding AVANT's environmental project experience and performance.

Mr. Brian Winters  
Omni Source Corporation  
1610 North Calhoun Street  
Fort Wayne, IN 46808  
(260) 423-8595  
Site Closure: Calhoun Street, Defiance, Maumee Soil Pile  
Active Sites: Maumee Maintenance Building, Former Macintosh Energy, Marion

Robert Davis  
Indy Corporation  
500 South Polk, Suite 35  
Greenwood, IN 46143  
(317) 889-5889  
Site Closure: Daleville

Steve Thompson  
American Electric Power Company  
One Summit Square  
P.O. Box 60  
Fort Wayne, IN 46801-0060  
(260) 425-2162  
Site Closure: Elwood, Fostoria, Lawton, Benton Harbor

Jayne E. Browning  
Saint-Gobain Container Corporation  
1509 S. Macedonia Avenue  
P.O. Box 4200  
Muncie, IN 47302-3664  
(765) 741-7112  
Site Closures: Marion Tank Farm, Marion Wastewater Lagoons  
Active Site: Marion

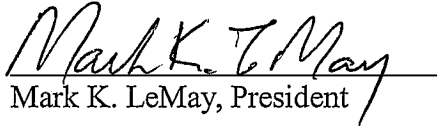
Bill Crane  
Genesis Management Services, Inc.  
827 South Union Street, Suite 130  
Warsaw, IN 46580-4703  
(574) 268-1236  
Site Closures: Warsaw, Lakeville  
Active Sites: North Manchester, Bremen

## **6.0 OTHER**

None required

## 7.0 CERTIFICATION STATEMENT

- a. **Certification Statement.** To the best of AVANT's knowledge, all information provided herein is accurate and complete.

  
Mark K. LeMay, President

- b. **Disclosure.** AVANT is not aware of any circumstance/information that may impair AVANT's ability to provide the level of services requested.
- c. **Conflicts of Interest.** AVANT is not aware of any relationships with any person(s) associated with local or state government which may pose a conflict of interest with the award of this contract.
- d. **Criminal, litigation or enforcement activities.** AVANT has not been part of any past or pending (1) criminal investigation, (2) litigation, or (3) civil enforcement actions. AVANT has presented the results of environmental investigations in civil lawsuits. None of the parties have included local or state governmental agencies.